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(21)Application number : **2001-089987**(71)Applicant : **RICOH CO LTD**(22)Date of filing : **27.03.2001**(72)Inventor : **EMOTO SHIGERU
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(54) DRY TONER, MANUFACTURING METHOD FOR THE TONER AND IMAGE FORMING APPARATUS USING THE TONER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a toner with which images of high resolution and high image quality can be stably formed many times without causing any cleaning failure by toner shape control.

SOLUTION: The dry toner containing at least resin and colorant, has a roundness of 0.960 to 1.000 and has a plurality of recesses on its surface.

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. *** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The dry type toner which the circularity of this toner is 0.960-1.000, and is characterized by having two or more impressions on a front face in the dry type toner which contains resin and a coloring agent at least.

[Claim 2] The dry type toner according to claim 1 characterized by the circularity of said dry type toner being 0.980-1.000. [Claim 3] The dry type toner according to claim 1 or 2 characterized by the major axis of the impression of the front face where two or more impressions of the above-mentioned front face are measured on the image (SEM image) photoed with the scanning electron microscope being 1.0-5.0 micrometers.

[Claim 4] The dry type toner according to claim 1 to 3 characterized by the toner mean particle diameter of the above-mentioned toner being 4-9 micrometers.

[Claim 5] A dry type toner given in either of above-mentioned claims 1-4 characterized by the resin of the highest presentation in a presentation being polyester resin at least in the above-mentioned dry type toner.

[Claim 6] The dry type toner according to claim 5 with which the above-mentioned polyester resin is characterized by 30000 or or more 30000 [1000 -] component being [1% or more and number average molecular weight] 2000-15000 for the peak of molecular weight in the molecular weight distribution of THF extractives.

[Claim 7] the molecular weight distribution of the THF extractives of the above-mentioned polyester resin — claim 5 which is and is characterized by a 1000 or less molecular weight component being 0.1 - 5.0%, or the dry type toner of a publication. [Claim 8] The dry type toner according to claim 5 to 7 characterized by the THF insoluble matter of the above-mentioned polyester resin being 1 - 10%.

[Claim 9] The dry type toner according to claim 5 to 8 characterized by for the glass transition point of the above-mentioned polyester resin being 55-75 degrees C, and the acid number being 1 - 30 mgKOH/g.

[Claim 10] The dry type toner according to claim 5 to 9 characterized by the above-mentioned polyester resin being denaturation polyester.

[Claim 11] The dry type toner according to claim 10 characterized by the denaturation polyester resin of the above-mentioned publication having UREA association.

[Claim 12] A dry type toner given in either of above-mentioned claims 5-11 characterized by containing the polyester resin with which polyester resin has not denaturalized in the polyester resin of the above-mentioned publication.

[Claim 13] A dry type toner given in either of above-mentioned claims 5-12 characterized by the ratios of the polyester resin which has not denaturalized with denaturation polyester resin including the polyester resin with which the polyester resin of the above-mentioned publication has not denaturalized with denaturation polyester resin being 5 / 95 - 80/20.

[Claim 14] A dry type toner given in either of above-mentioned claims 5-13 characterized by containing the alkylene oxide addition product of bisphenols at least as a polyol component of the polyester resin of the above-mentioned publication.

[Claim 15] The dry type toner according to claim 10 to 14 with which the distributed particle size

of the coloring agent in the above-mentioned toner is 0.5 micrometers or less in a number pitch diameter, and the number rate of 0.7 micrometers or more is characterized by five-piece being the toner it is [toner] several % or less by particle size.

[Claim 16] The dry type toner according to claim 1 to 15 with which the distributed particle size of the coloring agent in the above-mentioned toner is 0.3 micrometers or less in an individual number average, and an individual number average is characterized by being the toner whose number rate of 0.5 micrometers or more is below a ten-piece number.

[Claim 17] The dry type toner according to claim 1 to 16 characterized by the above-mentioned dry type toner containing a wax as a release agent.

[Claim 18] The dry type toner according to claim 1 to 17 characterized by the above-mentioned dry type toner containing an electrification control agent.

[Claim 19] The dry type toner according to claim 1 to 18 characterized by being obtained by removing the solvent of the emulsification dispersion liquid by which an organic solvent is made to dissolve or distribute the toner constituent which consists of resin and a coloring agent at least, and make this melt or a distributed object distribute while an inorganic dispersant or a particle polymer exists in a drainage system medium, and the polyaddition reaction of this melt or the distributed object might be carried out.

[Claim 20] The dry type toner according to claim 19 characterized by the solid content concentration of emulsification dispersion liquid being 10 - 50% in the above-mentioned dry type toner.

[Claim 21] The dry type toner according to claim 19 or 20 characterized by obtaining the isocyanate radical content prepolymer distributed in the drainage system medium by removing the solvent of an expanding reaction and the emulsification dispersion liquid which were made to carry out crosslinking reaction and were obtained by amines while the toner constituent which consists of polyester resin in the above-mentioned drainage system medium is distributed and an inorganic dispersant or a particle polymer exists.

[Claim 22] The dry type toner according to claim 21 characterized by using the toner whose solid content concentration of emulsification dispersion liquid is 10 - 50% in the above-mentioned dry type toner.

[Claim 23] The dry type toner according to claim 1 to 22 characterized by this toner being a 2 component toner.

[Claim 24] Image formation equipment characterized by using the dry type toner of a publication for either of above-mentioned claims 1-23.

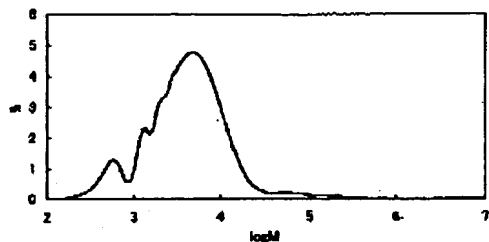
[Claim 25] Image formation equipment according to claim 24 characterized by being equipment with which the above-mentioned image formation equipment forms a multi-colored picture image.

[Claim 26] Image formation equipment according to claim 24 or 25 characterized by the above-mentioned image formation equipment having the middle imprint means of an endless mold.

[Claim 27] Image formation equipment according to claim 24 to 26 characterized by the above-mentioned image formation equipment having a blade cleaning means.

[Translation done.]

Drawing selection **drawing 1**



[Translation done.]